Recent Trends in Northeastern Illinois Expressway Vehicle Miles Traveled (VMT)

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July, 2008

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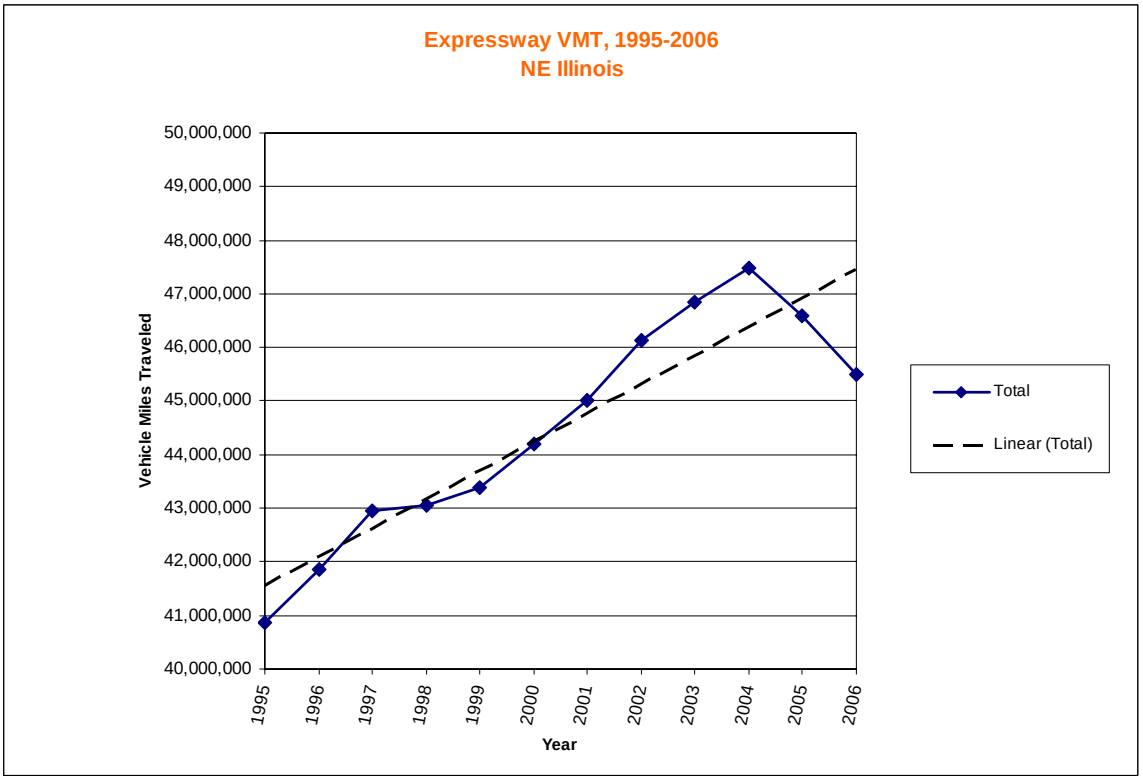
Introduction

Vehicle miles travelled (VMT) on expressways in metropolitan Chicago grew from 40.9 million in 1995 to 47.5 million in 2004, before falling to 45.5 million in 2006. Limited data suggests that this decline has continued through 2008. This change, monitored as part of on-going tracking of VMT trends, was unusual. This paper explores factors affecting those trends.

Figure 1. Expressway VMT in Northeastern Illinois, 1995-2006



Source: CMAP

VMT declines in 2005 (-883,634) and 2006 (-1,097,560) may be attributed to two primary factors:

(1) reconstruction and price increases for much of the Illinois Tollway (including the introduction of Open Road Tolling) and
(2) the initiation of the Dan Ryan reconstruction project, both explained below.

Some change in commuting habits were also a factor in the changes in VMT trends, particularly increased levels of telecommuting. However, there was, and continues to be an emerging trend of moderately declining VMT. Between 2006 and 2008, the decrease in VMT has become more directly attributable to the increasing cost of fuel.

Fuel-cost related reductions in VMT have been documented on a national scale by the Federal Highway Administration (FHWA) in its *Traffic Volume Trends* publication[1]. This pattern began to emerge in 2006 regionally and nationally. For example, 12-month national VMT fell from 3.009 trillion to 2.981 trillion in the periods ending in April, 2008 and 2007, respectively. This was a decline of about 1%. Regionally, VMT declines have recently accelerated. FHWA's *Urban Congestion Report – National Executive Summary* has shown peak-period Chicago-area VMT falling steeply in 2008, with average year-over-year declines averaging 4.6% for the first five reporting periods ending in 2008.[2]

Several factors contributing to declines in regional expressway VMT since 2004 are discussed below.

Factor 1. Illinois Tollway Toll Increases and Construction

The long-term trend of increasing VMT on the Illinois Tollway was interrupted in 2005 (see Figure 2). A toll increase was implemented on January 1 to finance system reconstruction and congestion relief. Congestion relief was implemented in the form of additional capacity and "Open Road Tolling." Transponder technology was used for the collection of most tolls at highway speeds. Construction projects financed with the toll rate increase have been underway since then to reconstruct the system, add lanes, and replace mainline toll barriers with Open Road Tolling. Open Road Tolling was in place system-wide by the end of 2006. Most remaining construction projects will be completed by 2009, though construction on the north end of the Tri-State Tollway will be continued through 2010.

The price increase was implemented on January 1, 2005. Passenger vehicles with I-Pass transponders did not face any toll rate increase; tolls for passenger vehicles paying cash were raised 100%. From 2004 to 2005, passenger cars using I-Pass went up 53.3%; passenger cars paying cash fell 49.1%. The weighted percentage toll change of 28.4% resulted in a 3% decline in passenger vehicle transactions (toll price elasticity -0.11). Commercial vehicle I-Pass use rose 15.1%, while commercial vehicle cash transactions fell 41.5%. The weighted percent toll for commercial vehicles rose 165%, which was a factor in a 10.8% decline in commercial vehicle use of the Tollway (toll price elasticity -0.07).[3]

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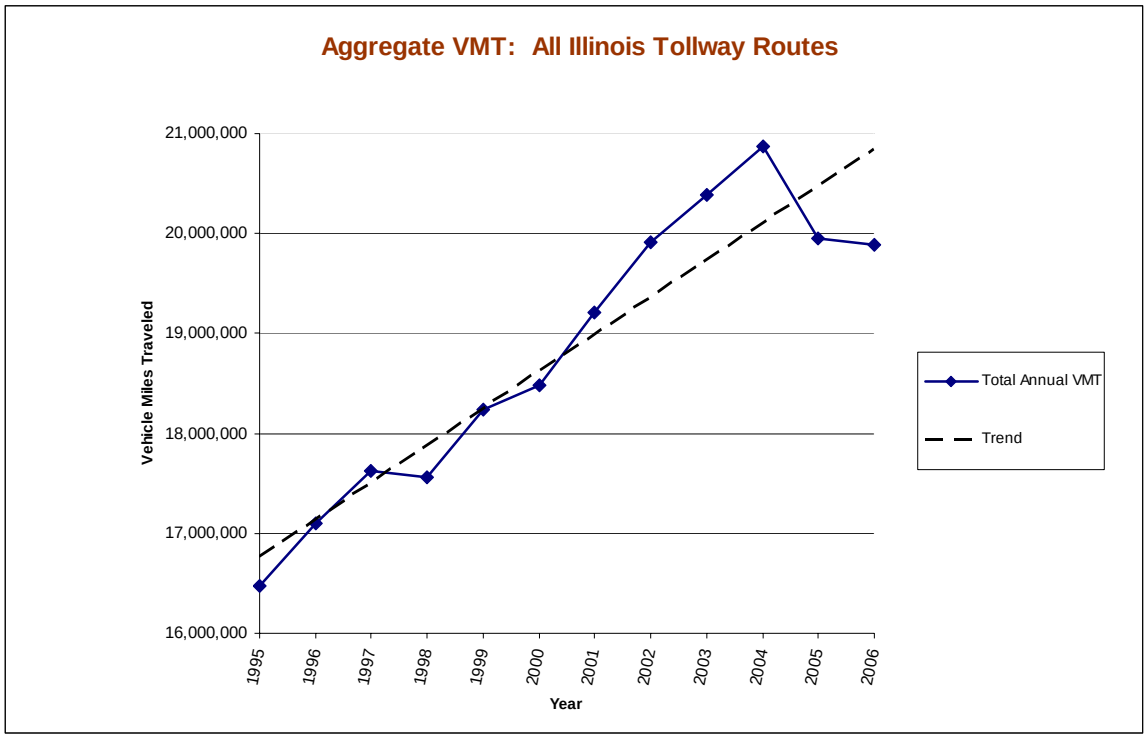
[1] http://www.fhwa.dot.gov/ohim/tvtw/tvtpage.htm

[2] Federal Highway Administration. *Urban Congestion Reports*, *National Executive Summary.* Periods Nov. 2007 – Jan. 2008 through Mar. – May 2008.

[3] Illinois Tollway and Wilbur Smith Associates. *Illinois Tollway Value Pricing Pilot Study.* January, 2007. p. 26. Note that the study calculated the price elasticities for toll rates only. Calculating the price elasticity using total trip costs (using distance and travel time costs) might better predict the effects of other travel price changes.

As the effects of the toll increases took place in 2005, large-scale construction was also being undertaken. Disaggregating these effects is difficult. A full understanding will require waiting until construction is completed in 2009 and 2010.

Figure 2. Annual Vehicle Miles Travelled, Metropolitan Area Tollways, 1995-2006



Source: CMAP

The annual VMT for each segment comprising the Illinois Tollway system in the NE Illinois Expressway network is explored in the following table. By 2006, there appeared to be a modest recovery of VMT on all segments except the Tri-State Tollway and the Jane Addams Memorial Tollway. The rate of growth varies greatly between the segment pairs and illustrates the dichotomy of residential growth between the more mature northern and northwest suburbs and the southwestern suburbs that will be explained further in Section 3.

Table 1. Annual Vehicle Miles Traveled, Metropolitan Area Tollways

--- Indicates Decline from Previous Year

Segment	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Edens Spur EB	112,260	120,926	122,066	121,223	121,063	121,217	120,272	120,048	126,582	121,275	113,076	114,991
Edens Spur WB	113,470	117,087	119,212	120,429	119,193	119,036	117,385	118,372	120,667	120,247	112,942	116,486
I-88/Reagan Memorial Tollway EB from IL 47 to I-290	1,277,254	1,340,962	1,365,937	1,319,850	1,456,609	1,477,341	1,532,341	1,650,127	1,700,154	1,756,637	1,744,862	1,757,474
I-88/Reagan Memorial Tollway WB from I-290 to IL 47	1,312,224	1,360,693	1,371,516	1,325,121	1,458,176	1,503,971	1,570,755	1,697,830	1,737,244	1,788,091	1,720,769	1,776,274
I-355/Veterans Memorial Tollway NB from I-55 to I-290	747,834	792,428	845,206	851,205	900,489	964,933	1,005,530	1,064,837	1,075,612	1,121,903	1,092,323	1,097,976
I-355/Veterans Memorial Tollway SB from I-290 to I-55	770,231	809,377	876,516	877,692	912,895	971,299	1,033,782	1,063,860	1,086,118	1,128,495	1,110,127	1,129,602
I-90 Jane Addams Tollway EB from US 20 to Kennedy Expy	1,710,023	1,854,345	1,814,259	1,862,380	2,056,845	2,015,657	2,164,214	2,092,847	2,132,211	2,221,236	2,155,678	2,104,044
I-90 Jane Addams Tollway WB from Kennedy Expy to US 20	1,710,453	1,751,580	1,816,744	1,773,471	1,972,068	1,906,342	2,057,156	2,015,751	2,088,412	2,189,126	2,123,348	2,052,379
Tri-State Tollway EB from US 41 (S of WI State Line) to Bishop Ford Fwy	4,486,862	4,596,003	4,785,406	4,786,618	4,758,343	4,778,066	4,872,103	5,115,691	5,241,495	5,273,538	4,997,556	4,943,793
Tri-State Tollway WB from Bishop Ford Fwy to US 41 (S of WI State Line)	4,229,238	4,352,404	4,503,676	4,519,911	4,479,071	4,625,861	4,739,408	4,973,646	5,071,332	5,154,765	4,783,069	4,792,713
Total	**16,471,844**	**17,097,801**	**17,622,534**	**17,559,897**	**18,236,751**	**18,485,723**	**19,214,947**	**19,915,011**	**20,381,830**	**20,877,317**	**19,955,755**	**19,887,738**
Change from Previous Year		*625,957*	*524,734*	*(62,637)*	*676,854*	*248,972*	*729,223*	*700,064*	*466,819*	*495,487*	*(921,562)*	*(68,017)*

Table 2. Annual Vehicle Miles Traveled, South Corridor Expressways

--- Indicates Decline from Previous Year

Segment	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Dan Ryan Expy Locals EB from Eisenhower Expy to Bishop Ford Fwy	1,081,117	1,057,521	1,053,222	1,057,779	1,043,883	1,073,523	1,046,797	1,082,369	1,098,302	1,072,566	1,153,637	1,064,599
Dan Ryan Expy Locals WB from Bishop Ford Fwy to Eisenhower Expy	1,007,512	990,425	1,022,111	1,033,134	1,028,509	1,087,083	1,096,689	1,111,359	1,085,000	1,046,586	1,039,687	739,807
Dan Ryan Express Lanes EB from N of 22nd Str to Skyway Interchange	463,551	432,223	439,249	442,034	437,753	445,686	438,911	446,630	456,093	432,388	349,037	182,653
Dan Ryan Express Lanes WB from Skyway Interchange to N of 22nd Str	448,087	453,035	473,137	474,260	476,225	468,844	462,643	463,221	471,254	435,497	406,022	356,865
I-57 NB from I-80 to Wentworth	612,461	621,798	641,897	667,200	695,008	697,692	697,366	694,053	742,645	750,327	788,269	728,084
I-57 SB from Wentworth	593,691	604,134	633,304	654,045	661,795	681,385	690,984	679,308	676,074	744,457	829,916	736,783
Bishop Ford Freeway EB from Dan Ryan Expressway to Tri-State Tollway	740,959	759,960	758,752	759,283	772,296	795,323	736,335	783,497	843,847	831,987	767,763	688,487
Bishop Ford Freeway WB from Tri-State Tollway to Dan Ryan Expressway	730,700	712,820	686,605	688,033	683,352	787,088	770,849	830,211	817,945	790,148	762,645	675,716
I-80/94 Kingery Expy EB from Bishop Ford Fwy to Indiana State Line	231,107	231,333	235,516	216,572	212,575	230,505	222,469	235,167	244,685	219,423	199,333	171,002
I-80/94 Kingery Expy WB from Indiana State Line to Bishop Ford Fwy	233,912	223,610	215,766	228,539	229,523	241,312	215,961	235,425	241,104	217,079	197,978	170,497
Total	**6,143,097**	**6,086,859**	**6,159,559**	**6,220,879**	**6,240,919**	**6,508,441**	**6,379,004**	**6,561,240**	**6,676,949**	**6,540,458**	**6,494,287**	**5,514,493**
Change from Previous Year		(56,238)	72,700	61,320	20,040	267,522	(129,437)	182,237	115,708	(136,490)	(46,172)	(979,794)

Factor 2. Major Road Reconstruction

Major expressway reconstruction projects on Chicago's South Side and in the South Suburbs (collectively, the "South Corridor") have encouraged travelers to seek alternate routes or to utilize transit. VMT levels have been trending down since 2002-2003 on several segments within the South Corridor. Construction activities were as follows:

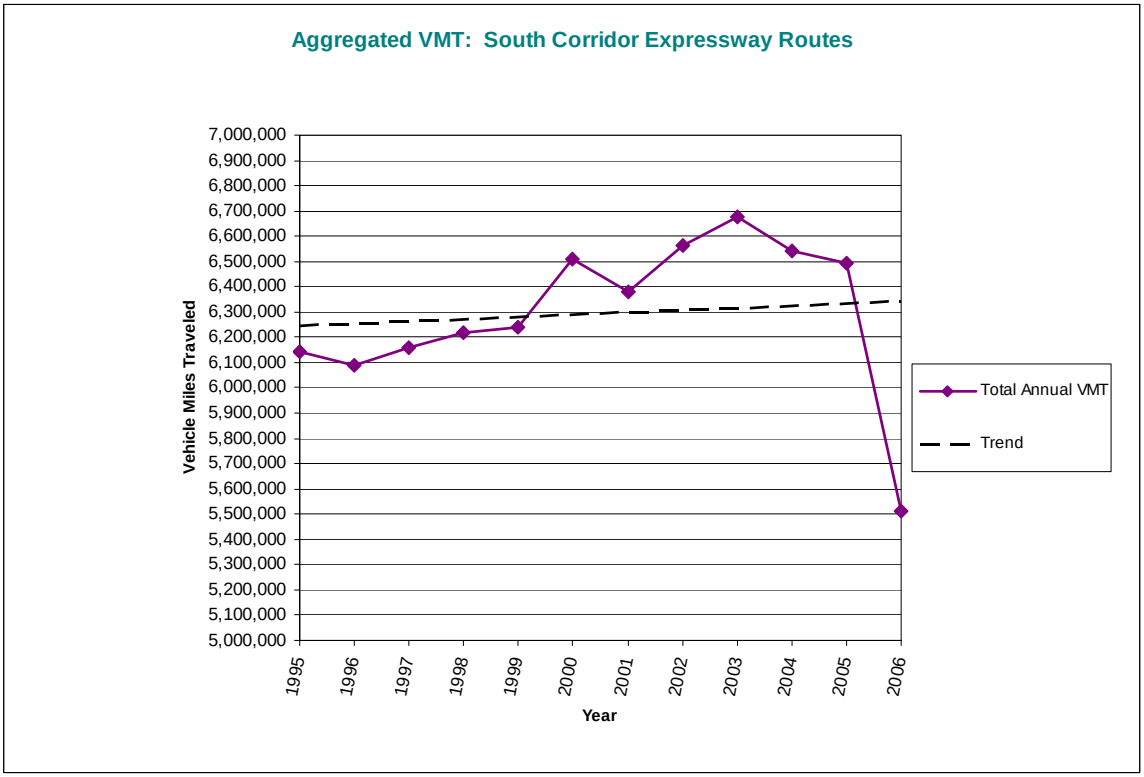
- I-57 from I-94/Dan Ryan Expressway to I-80: 2002-2003[4]
- I-80-94/Kingery Expressway, I-94/Bishop Ford Freeway, IL 394: 2004-2007[5]
- I-90/94 Dan Ryan Expressway: 2004-2007, with major construction focused during 2006-2007.[6]
- I-80/I-94 Borman Expressway (Indiana) 2003-2009, with major construction on sections near Illinois border focused on 2003-2005. Work continues in the vicinity of I-65.[7]
- I-90/Chicago Skyway Toll Bridge: 2001-2004, with major construction focused on 2003-2004.

For the publicly operated expressways in the region for which measures are available, VMT declined by 979,800 from 2005 to 2006, accounting for most of the annual decline for that year; see Figure 3. This was partly offset by increased VMT on Lake Shore Drive; see Figure 4.

Note: VMT data for 1995 and 2006 are shown for most expressway segments in Table 5 in the next section (page 11).

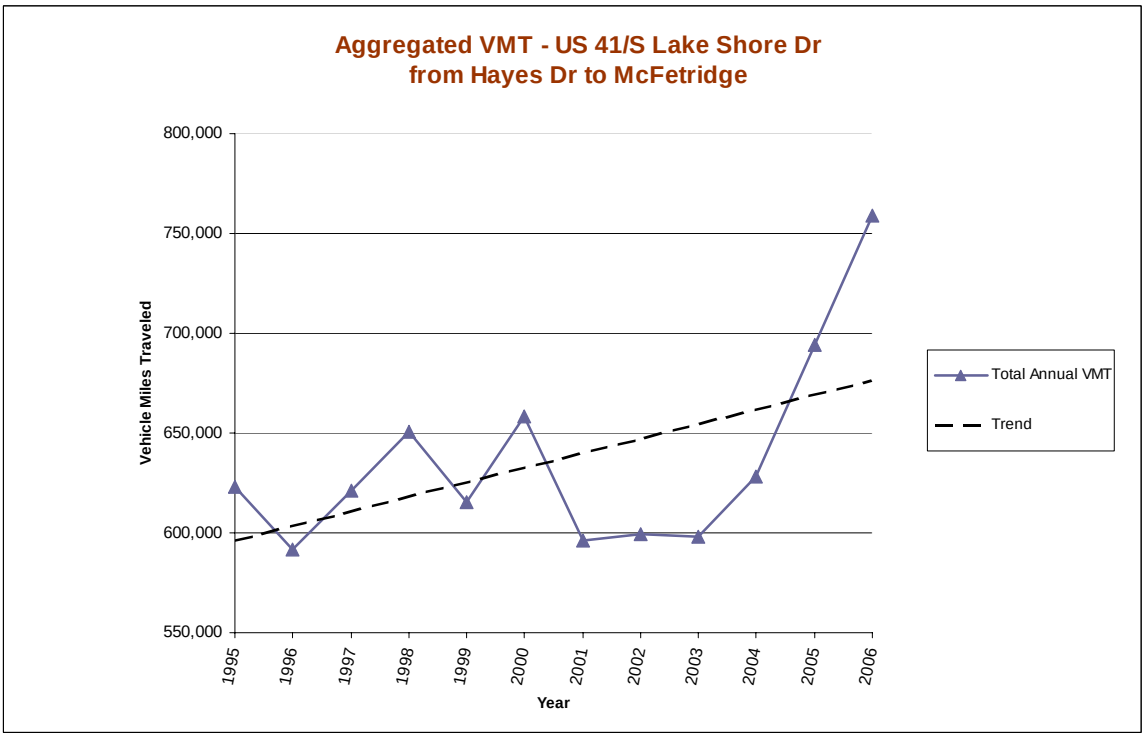
[4] http://www.dot.state.il.us/i57/i57.html. Accessed July, 2008
[5] http://www.dot.il.gov/press/r071907.html Accessed July 2008
[6] http://www.dot.il.gov/press/r030206.html Accessed July 2008
[7] http://www.in.gov/indot/div/projects/borman/about/time.html Accessed July, 2008

Figure 3. Aggregated Annual VMT: South Corridor Expressways



Source: CMAP. Note: South Corridor Expressways include Dan Ryan Local and Express Lanes, I-57, Bishop Ford Freeway, and Kingery Expressway.

Figure 4. Aggregated VMT for US 41/South Lake Shore Drive



Source: CMAP

Traffic counts obtained from the City of Chicago also indicate a significant increase in Average Daily Traffic (ADT) readings between Winter 2006 and Fall 2006 observation dates on several N-S arterial-level routes. See Table 3.

Table 3. ADTs on Dan Ryan Alternate Routes

Average Daily Traffic on Dan Ryan Expressway Alternate Routes, Pre- and During Construction Activity in 2006

-during Dan Ryan Reconstruction Activity

Location	Date	ADT	AM Peak Hour* (7:30-8:30am) ADT
Ashland Avenue at 62nd Street	3/14/2006	23471	1357
	10/31/2006	36058	2523
Ashland Avenue at 82nd Street	3/14/2006	26259	1698
	10/4/2006	34296	2276
Michigan Avenue at 54th Street (one way Southbound)	3/2/2006	7932	291
	10/11/2006	10781	380
Cottage Grove at 72nd Street	3/1/2006	17769	1099
	12/19/2006	21444	1163
Jeffery Blvd at Marquette Rd	3/8/2006	21209	1434
	9/6/2006	29174	2294
Jeffery Blvd at 81st Street	3/8/2006	13373	814
	9/6/2006	19475	1384

*For all locations, the 7:30-8:30am period total ADT was used, though in some cases not the peak hourly total

Source: CMAP

Factor 3. Regional Variations in Residential and Employment Growth.

A much larger share of the region's residential growth between 1995 and 2006 occurred in the outlying western and southwestern suburbs – Kane, Kendall, and Will Counties – than in the established suburban areas of Lake, DuPage, and Cook Counties. The existing expressway system has not been significantly extended to serve these new origins, whether the residents are commuting to either existing or emerging activity centers.

For example, a trip that once originated in Berwyn, a near-west suburban Cook County community, utilizing I-290 and I-88 to travel to far-west suburban Naperville may now originate in Plainfield, in Will County, using the north-south arterial IL Route 59 to reach the same destination. IL Route 59 Average Annual Daily Traffic at the Will-DuPage county line grew from 35,800 in 2001 to 40,500 in 2003 and 45,400 in 2007.[8] Newer residential areas in Kane County may utilize Randall Road in a similar fashion to travel to Fox River bridge crossings,

[8] Illinois Department of Transportation, *Average Daily Total Traffic, State Primary System,* Years 2001, 2003, and 2007.

ultimately arriving at DuPage County or Northwest corridor job centers without utilizing expressways.

Variations also occurred among expressways. Among regional toll roads, the VMT rebound on I-355 in 2006 may have been because of a larger Will County residential base. I-55, serving northern and western Will County, has seen relatively few year-to-year decreases in VMT.[9] Conversely, the closer-in north, northwest and west suburbs have shown more moderate growth in this period. See Table 4

Table 4. Estimated Population Change, Metropolitan Chicago

Area	Population Estimates		Change in Population, 2000-2007	Compound Annual Growth Rate (Percent)
	2000 July 1	2007 July 1		
Chicago	2,896,305	2,836,658	-59,647	-0.297%
Suburban Cook County	2,481,622	2,448,449	-33,173	-0.192%
Cook County Subtotal	5,377,927	5,285,107	-92,820	-0.248%
DuPage County	906,760	929,192	22,432	0.350%
Kane County	407,584	501,021	93,437	2.992%
Kendall County	55,207	96,818	41,611	8.356%
Lake County	648,241	710,241	62,000	1.313%
McHenry County	261,887	315,943	54,056	2.717%
Will County	508,067	673,586	165,519	4.111%
Region	8,165,673	8,511,908	346,235	0.595%
State of Illinois	12,439,219	12,852,548	413,329	0.468%

Source, U.S. Census Bureau, Annual Estimates of the Population for Counties of Illinois: April 1, 2000 to July 1, 2007 (CO-EST2007-01-17), CMAP

Expressways serving some combination of the southwest and far west suburbs had the highest annual VMT growth during the period 1995 to 2006, whereas the expressways serving Cook County and the northern suburbs had smaller annual growth rates. See Table 5.

[9] 6 of 24 annual I-55 VMT totals, northbound and southbound on I-55, showed declines, the lowest number of declines on the expressway system. Note that the VMT trend on I-55 is partly masked by a lack of data south of Naperville Road on I-55. These road segments are not served by loop detectors. Loop detectors serve as a basis for CMAP metropolitan expressway VMT estimates on IDOT facilities. Likewise, I-80 west of US 45 does not have loop detectors. I-55 spot ADT volumes south of I-80 increased from 50,000 in 2001 to 68,000 in 2007 (also related to a new intermodal terminal on the site of the former Joliet Arsenal). On I-80 west of I-55, spot ADT volumes fell from 39,400 to 36,700.

Table 5. Average Annual VMT Growth on NE Illinois Expressway Systems

Expressway	Annual VMT		Change in VMT, 1995-2007	Compound Annual Growth Rate (Percent)
	1995	2006 Highlight: Construction; Regional Growth		
I-90/94 Dan Ryan Expressway Express Lanes from 22nd Street to Skyway	911,638	539,518	-372,120	-4.657%
I-80-94 Kingery Expressway from Bishop Ford Freeway to Indiana State Line	465,019	341,499	-123,520	-2.768%
I-90/94 Dan Ryan Expressway Locals from Eisenhower Expressway to Bishop Ford Freeway	2,088,629	1,804,406	-284,223	-1.321%
I-94/Bishop Ford Freeway from Dan Ryan Expressway to I-294/Tri-State Tollway	1,471,659	1,364,203	-107,456	-0.687%
Kennedy Expressway from O'Hare to I-290/Eisenhower Expressway	3,378,597	3,389,614	11,017	0.030%
US 41/North Lake Shore Drive from Bryn Mawr to Randolph	1,111,014	1,125,798	14,784	0.120%
I-290 Eisenhower Expressway from Eisenhower Extension to Wacker Drive	3,099,675	3,158,769	59,094	0.172%
I-94/Edens Spur from Tri-State Tollway to Edens Expressway	225,730	231,477	5,747	0.229%
Edens Expressway from Clavey Road to Kennedy Expressway	2,594,842	2,709,913	115,071	0.395%
I-90/94 Kennedy Expressway Reversibles from Edens Expressway to Ohio Street	272,125	288,188	16,063	0.523%
Elgin-O'Hare Expressway from US 20/Lake Street to West of IL 53	434,612	476,138	41,526	0.833%
I-290/Eisenhower Extension from I-90/Jane Addams Memorial Tollway to Eisenhower Expressway	2,540,015	2,820,869	280,854	0.958%
Tri-State Tollway from US 41 (south of WI State Line to Bishop Ford Fwy	8,716,100	9,736,506	1,020,406	1.012%
IL 53 from Lake Cook Road to I-90	788,358	906,587	118,229	1.278%
I-57 from I-80 to Wentworth	1,206,152	1,464,867	258,715	1.782%
I-90 Jane Addams Memorial Tollway from US 20 to Kennedy Expressway	3,420,476	4,156,423	735,947	1.787%
US 41/South Lake Shore Drive from Hayes to McFetridge	623,361	759,161	135,800	1.808%
I-55 from Lake Shore Dr to IL 53	3,409,725	4,469,713	1,059,988	2.491%
I-88/Reagan Memorial Tollway from West of IL 47 to I-290 Eisenhower Expressway	2,589,478	3,533,748	944,270	2.867%
I-355/Veterans Memorial Tollway from I-290 to I-55	1,518,065	2,227,578	709,513	3.548%

Source: CMAP

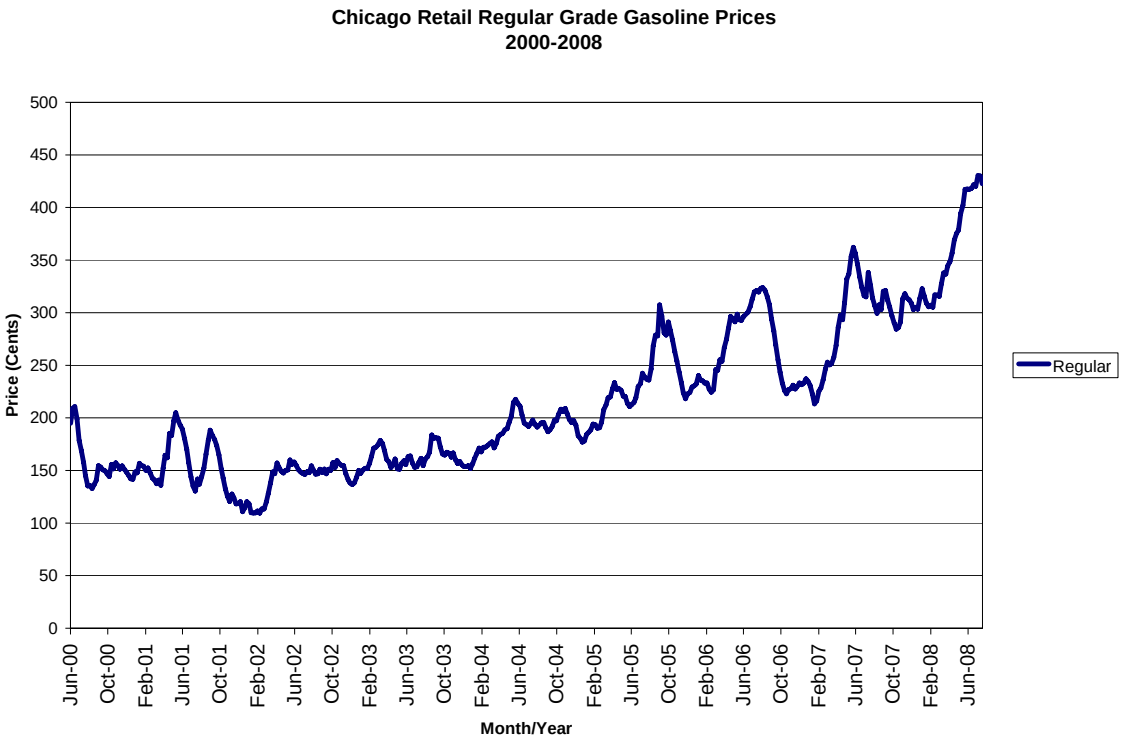
Factor 4. Increasing Cost of Motor Fuel

Between June, 2000, and June, 2008, gasoline in Illinois doubled in price from approximately $2.00 to more than $4.00 per gallon. Over this period, gas prices have been very seasonal, with price spikes often occurring during the spring and summer months. See Figure 5.

As noted in the introduction to this paper, effects of higher gasoline prices on travel demand were not substantial until 2008. The price spikes prior to 2008 were short-lived and may not have affected year-long VMT totals appreciably. In addition, seasonal price spikes early in the decade did not reach the levels seen in 2008.

As also noted in the introduction, VMT declines have recently accelerated, likely because of higher retail gasoline prices. Year-to-year declines in Chicago area peak-period VMT averaged 4.6% for the first five reporting periods in *Urban Congestion Report – National Executive Summary*.[10] These declines echo similar declines nationally. Sixteen (16) of 23 reporting metro areas showed declining VMT in the latest reporting period.

Figure 5. Retail Gasoline Prices



Source: Energy Information Administration, 2008.

[10] Federal Highway Administration. *Urban Congestion Reports*, *National Executive Summary.* Periods Nov. 2007 – Jan. 2008 through Mar. – May 2008.

Factor 5. Changes in Travel Mode Share

Journey-to-Work data from the 2000 and 2006 American Community Survey (2000 Census Supplement) confirm that recent commuting trends have continued. A separate paper is in process studying recent changes in mode share in detail. Table 6 shows data highlights.

Here are a few key points from Table 6:

- The number of workers regularly working at home continued to rise.
- Transit mode share fell, but the number of work trips was nearly steady.
- The number and share of workers driving alone to work rose.

Table 6. Means of Transportation to Work

Means of Transportation to Work	Year 2000		Year 2006	
	Workers	% Share of Total	Workers	% Share of Total
Transit (excluding Taxi)	497,319	13.3%	477,510	12.2%
Light Vehicle				
Drove Alone	2,590,171	69.1%	2,759,982	70.4%
Carpool	388,487	10.4%	358,627	9.2%
Bicycled or Walked	136,870	3.6%	131,903	3.4%
Worked at Home	104,106	2.8%	146,910	3.7%
Other (including Taxi)	33,644	0.9%	43,922	1.1%
Total	3,750,597		3,918,854	

Source: U.S. Census Bureau, American Community Survey, Years 2000, 2006

These changes were partly the result of demographic changes noted earlier in this paper. As more people leave transit-rich areas to live in areas with less transit service, fewer workers will use transit to travel to work and more people will drive. Though transit mode-share has grown substantially in the collar counties, this growth has not overcome the base transit service shortages in these counties. More details will be available in the forthcoming paper.

In spite of falling transit mode-share for work trips, the Chicago Transit Authority, Pace Suburban Bus Service, and Metra commuter rail service have all seen increases in ridership. Overall, unlinked passenger trips on the Regional Transportation Authority system rose from 534.2 million in 1995 to 613.6 million in 2006, an increase of 14.9% (an annual compound growth rate of 1.268%). See Table 7.

Table 7. Annual RTA System Unlinked Passenger Trips (in millions)

Year	CTA Bus	CTA Rail	Total CTA	Metra	Pace	System
1995	307.3	119.3	426.6	70.4	37.2	534.2
1996	303.3	124	427.3	70.6	37.5	535.4
1997	288.9	151	439.9	72.3	37.9	550.1
1998	291.7	153.6	445.3	74.5	39.3	559.1
1999	300.3	166.5	466.8	76.6	40.2	583.6
2000	303.3	176.3	479.6	78.8	38.6	597
2001	303.1	181.7	484.8	79.2	37	601
2002	304.8	180.4	485.2	76.8	34.8	596.8
2003	293.5	181.1	474.6	74.8	33.7	583.1
2004	296	178.7	474.7	74.4	34.1	583.2
2005	305.5	186.8	492.3	77	36.9	606.2
2006	299.6	195.2	494.8	80.8	38.0	613.6

Source: RTA-Regional Transportation Asset Management System (RTAMS)

Summary

This brief paper scanned limited available information to try to discern factors affecting recent changes in vehicle miles travelled (VMT) on expressways in metropolitan Chicago. VMT has been decreasing on area expressways since 2005.

The paper reviewed five important factors:

- Illinois Tollway toll increases and construction;
- Major road construction;
- Regional variations in residential and employment growth;
- Increasing cost of motor fuel;
- Changes in travel mode share.

A price increase on the Illinois Tollway system and large-scale reconstruction of area expressways were important factors in explaining the decline in VMT when it initially began to occur. In addition, changes in population growth explained some of the changes in VMT patterns, particularly in the southwest and west suburbs.

Recently, sparse VMT data confirm that the gasoline price increases in 2008 may be a major cause of more recent VMT declines. As more data becomes available, additional study will be undertaken.